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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,877	09/27/2000	KAZUO ICHIKAWA	107469	7376
25944	7590	03/21/2005	EXAMINER	
OLIFF & BERRIDGE, PLC			ZERVIGON, RUDY	
P.O. BOX 19928			ART UNIT	
ALEXANDRIA, VA 22320			PAPER NUMBER	
			1763	

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/670,877	Applicant(s) ICHIKAWA ET AL.	
	Examiner Rudy Zervigon	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 3, 2005 has been entered.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "introduction holes" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

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be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al (U. S. Pat. 5,648,276) in view of Babayan et al (US 2002/0129902 A1) and Goodyear; Andrew L. et al. (US 5,532,190 A). Hara et al teaches a CVD system (C₁, C₂; Figure 2; column 7, lines 7-8) provided with a plasma generator (Fig.3, "UE", column 7, lines 15-20) having a plasma generation chamber (Fig. 3 containing "PL"; column 7, lines 15-20), including a circumferential wall (QW; Figure 3; column 7, lines 10-15) made of an insulator ("quartz"), the plasma generation chamber (Fig. 3 containing "PL"; column 7, lines 15-20) being separated from a film deposition chamber (Fig. 3 "QW" and "SW"; column 7, lines 10-15) in which a substrate (1) is arranged, and a film is deposited (column 7, lines 7-8) on the substrate within the same chamber (Fig. 3 "QW" and "SW"; column 7, lines 10-15) as the substrate is not moved (Fig.3). A material gas (Fig.3, "Gas (SiH₄, etc)") is directly supplied into the film deposition chamber, radicals in the plasma are introduced into the film deposition chamber from the plasma generator through introduction holes ("ME", mesh, Fig.3) of a lower plate (lower half of "ME"), and a thin film ("a-Si:H", column 7, lines 5-10) is deposited on the substrate. A gas feeder ("Gas (Ar, ...)"; Fig.3) is provided to the plasma generator.

Hara et al further teaches a silicon-based film is deposited on a substrate ("a-Si:H", column 7, lines 5-10, lines 65-67), then converting the silicon-based film to a crystalline silicon-based film

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by laser annealing (column 8, lines 5-11), then depositing a gate insulating film ("SiO₂"; column 8, lines 20-25) on the crystalline film by a CVD system comprised of a separate film deposition chamber and plasma generation chamber as described above. Plasma "cleaning" is discussed as a step prior to forming the gate insulating film (column 13, lines 9-20). Also, see column 14, lines 10-25 and column 17, lines 1-10.

Hara does not teach that the lower plate (lower half of "ME") is connected to ground thereby allowing only radicals to pass. Further, Hara does not teach diameters of his introduction holes thereby allowing only radicals to pass.

Babayan teaches a capacitively coupled plasma apparatus (Figure 1). Specifically, Babayan teaches both electrically conductive upper (26, 28) and electrically conductive lower (22) electrodes as grounded ([0042]) thereby allowing only radicals to pass ([0039]).

Hara and Babayan do not teach that Hara's lower plate (lower half of "ME") include diffusion holes, separate from Hara's introduction holes ("ME", mesh, Fig.3).

Goodyear teaches a capacitive (electrode) plasma processing apparatus (Figure 1; column 3, line 59-column 4, line 18) including a perforated gas feeding electrode (12) which include diffusion holes (12b; Figure 1), separate from introduction holes (12a; Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace and ground Hara's upper electrode (ME) with Goodyear's perforated gas feeding electrode as taught by Babayan and Goodyear, and to optimize the dimension of Hara's introduction hole diameters thereby allowing only radicals to pass.

Motivation to replace and ground Hara's upper electrode (ME) with Goodyear's perforated gas feeding electrode as taught by Babayan and Goodyear, and to optimize the dimension of Hara's

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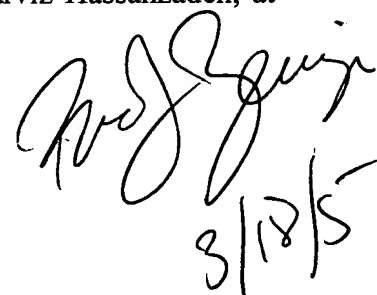
introduction hole diameters thereby allowing only radicals to pass is to avoid ion induced damage (last line, [0039]) as taught by Babayan, and for controlling regional gas compositions during processing as taught by Goodyear (column 4; lines 59-64) for uniform processing as taught by Goodyear (column 4; lines 43-50). Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04).

Response to Arguments

5. Applicant's arguments with respect to claims 1, 2, 5, and 6 have been considered but are moot in view of the new grounds of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.



3/18/5